



## Senior Vice President, Executive Consultant

*Regulatory Policy &  
Ratemaking Analysis  
Lecturer and Speaker  
Market Valuation  
Expert Testimony  
International Electricity &  
Gas Market Structure  
Smart Grid Development,  
Investment, Business &  
Market Strategy*

### Education:

Doctorate in Management, Case  
Western Reserve University  
(Energy Market Game Theory)  
M.A. Economics, New Mexico State  
University (Network Industries)  
B.S. Environmental Policy Analysis  
and Planning, University of  
California, Davis (Clean Energy)

### Total Years of Experience: 40

### Selected Professional Roles:

Senior VP, Willdan Group 2016-  
present  
Partner & Co-founder, The Energy  
Collaborative, 2013-present  
Executive Consultant & Senior  
Principal, Itron, Inc. 2011-2013  
Director, Utility Strategy Practice,  
Black & Veatch, Inc. 2009-2011  
Executive Consultant, Advisor &  
Founder, Strategy Integration,  
LLC 1992-present  
Vice President, Regulatory Affairs &  
Senior Development Director,  
Comverge, Inc. 2004-2009  
Senior Principal, Policy &  
Regulatory Strategy, Synergic  
Resources Corp, 1990-1992  
Commissioner Advisor, Cal. Public  
Utilities Commission, 1985-1990

### Association/Board Memberships:

IEEE – Advanced Technology  
American Economic Association  
Community Options for Families &  
Youth, Board, 2008-present  
CS Lewis Society, Board, 2007-12  
Demand Response and Smart Grid  
Coalition, Board, 2008-2010  
California Independent System  
Operator, Board, 1999-2002

**Hobbies:** Hiking, bicycling, fishing

Dr. Woychik is an expert and thought leader on regulatory policy, investment strategy, business models, geospatial valuation, wholesale energy markets, transformational change, and smart grid development. This includes more than 40 years of experience with over 45 countries to develop clean energy and traditional markets with utilities, technology providers, control operators, energy companies, stakeholder groups, and state and national regulatory bodies. Areas of focus include smart grid integration, optimization, the geospatial business case, business model development, transactive energy, and the utility of the future. Dr. Woychik has been an expert witness in over fifty regulatory and civil proceedings on energy resources, markets, and valuation.

## Representative Experience

### *Regulatory Policy & Ratemaking Analysis*

Recent projects include leadership roles in California's regulatory proceedings on Distribution Resource Plans, Integrated Demand Side Resources, and the Demand Response Settlement. Other projects have included a comprehensive energy efficiency portfolio review (California's \$3.2B utility spend), new clean energy and rate-case policy (e.g., for Entergy), marginal-cost rate design/revenue allocation, cost-of-service and productivity analysis, transmission expansion, generation expansion and refurbishment, demand-side management, and distribution line extension policy. A subset of these related efforts follows:

- Extensive policy, program, and regulatory consulting on energy efficiency, demand response, distributed generation, storage, integrated demand-side management (IDSMD), and water-energy-nexus.
- Panel design and moderator for utility incentive ratemaking to address risk and performance.
- Co-developed incentives for performance-based ratemaking in San Diego Gas & Electric proceedings.
- Provide financial basis for demand-side strategy based on consumer choice, cost-effectiveness, production cost modeling, and discounted-cash-flow at Southern California Edison.
- Developed underground distribution line-extension build-out strategy and policy in California.
- Advised on advanced energy metering implementation and policy in the U.S.
- Extensive expert witness testimony on energy utility distribution and line-extension build-out.
- State Commissioner Advisor and manager of numerous general rate case and project proceedings.
- Co-developed and implemented the groundbreaking equal percentage marginal-cost (EPMC) revenue allocation and rate design process and related rates for California electric utilities.
- Energy Analyst, Local Government Energy Planning Handbook, Cal. Energy Commission, 1982-83.
- Chair and Co-chair, City of Davis Electricity Load Management Committee, 1979-80.

## *Lecturer and Speaker*

Dr. Woychik has been a guest lecturer or speaker at Case Western Reserve University, Harvard University, Lawrence Berkeley Laboratories, Michigan State University, New Mexico State University, University of California Berkeley, University of California Davis, University of California Santa Barbara, University of Georgia, Saint Mary's College, and numerous conferences.

## *Market Valuation*

Develop and apply methods to value and define resource and technology portfolios based on market metrics:

- Ongoing advisor to international financial investors engaged with smart grid and energy companies.
- Business plan analysis and development focusing on determination of marginal value and uncertainty.
- Business case analysis of distributed resources and electricity markets for Africa (Ghana, South Africa), Asia (China, Hong Kong, India, Indonesia, Japan), Australia (New South Wales, Victoria, Tasmania, Western Australia), Central Asia (Armenia, Romania, Kazakhstan, Kirgizstan, Tajikistan), Europe (Denmark, England, Finland, Holland, Norway, Hungary, Scotland, Sweden, Poland, Ukraine, Wales.), Russia (5 regions), and North America (6 Canadian provinces, Mexico, Puerto Rico, and 39 U.S. states).
- Valuation of U.S. utility company merger for a large international energy company, focusing on integration of options across multiple RTOs/ISOs.
- Develop model components and methods for smart grid and demand-side management valuation with over one-hundred utility clients.
- Integrated demand-side management (IDSMD) cost-effectiveness white paper with California utilities and Public Utilities Commission.
- Demand-side management and smart-grid integration based on probabilistic methods for investor-owned utilities.
- Photovoltaic and battery system optimization and market valuation.
- Photovoltaic system integration, valuation, and cost-effectiveness.
- Financial valuation of all demand-side opportunities for Southern California Edison, based on detailed production costs, capacity, and financial modeling.
- Detailed economic modeling of supply and demand-side options, including consumer adoption for numerous utilities in the U.S., Canada, Australia, Europe, and India.
- Testimony on the economic and regulatory drivers to value a large portfolio of electricity and gas assets in the U.S., Canada, and U.K.
- Economic and option value methods to value demand response for Comverge and a host of other demand-side vendors and utilities.
- Co-author of the original California Standard Practice Manual (SPM) for cost-effectiveness of conservation and load-management (1982).
- Economic valuation of all building energy efficiency, demand response, and solar thermal options for all California building types.
- Development and administration of avoided cost (standard offer) contracts for California's independent power development.
- Economic and rate-impact valuation methodology for all demand-side options in Eastern Australia (New South Wales and Victoria).
- Economic and financial valuation of independent power facilities in Indonesia.
- Economic and rate-impact valuation methodology for demand-side options in Hawaii.

## *Expert Witness Testimony and Litigation Support*

Testimony and litigation support provided on over fifty occasions including work in these situations:

- Valuation of an independent power producer's 30 GW portfolio of plant and gas assets (in U.S., Canada, and U.K.) based on forward energy markets, modeling, and regulatory policies.
- Development of demand response valuation, ramping capacity need, capacity goals, baseline methodology, dynamic pricing, and GHG reduction for Alternative Energy Resources/Comverge, Inc.
- Development of energy policy mechanisms for demand-side management, shareholder incentives, contribution to lost margin, cost-recovery, smart-grid, pricing, policy, and planning for Entergy Corp.
- Define the implications for competition, resource planning, and direct/retail access in Arizona.
- Justify the cost-effectiveness of electricity end-use appliances, efficiency standards, modeling, and assumptions in a Department of Energy Proceeding for the Edison Electric Institute.
- Recommend the electric market redesign, congestion pricing, and market valuation of reliability-must-run generation in two proceedings before the Alberta Energy Utilities Board for the Firm Group.
- Integration of demand response in PJM, ISONE, MISO, including market design and rules, comprehensive market attributes, and pricing, for Demand Response Supporters and Comverge Inc.
- Recommendations on electricity markets, the dispatchable benefits of demand response, multi-market and locational benefits, in Maryland, Nevada, Pennsylvania, and Texas, for Comverge, Inc.
- Provide best practices in competitive electricity transmission, pricing, and generation markets, as well as competitive gas transmission and gas commodity pricing, for Western Australia.

### *International Electricity and Gas Market Structure*

An international expert on competitive electricity and gas reform since the mid-1980's:

- Expert Advisor, competitive market risk assessment, business planning and financial analysis, Russian Federal Grid Company.
- Executive Consultant to China Light & Power on options for smart grid and demand-side business case scenarios (full-scale roll-out).
- Electricity market advisor for Romania to prepare for EU membership.
- Comparison of Northern European and Western U.S. electricity markets.
- Team leader for 9-country Europe project on electric market structure options (comparing 7 major competitive electricity markets).
- Team leader to provide grid code for Kazakhstan Electricity Grid Co.
- Chief of Party and strategist to develop and implement electricity markets in Central Asia to link Kazakhstan, Kirgizstan, and Tajikistan with Afghanistan, Pakistan, and India.
- Deregulation and competition; New Brunswick Power, Canada.
- Team leader at Kazakhstan Electricity Grid Co. collaboration with California Independent System Operator on market structure formation, to create workable competitive energy and capacity markets.
- Team leader for power sector reform evaluation, Ukraine, Belarus, and Moldova.
- Advisor on electric market legislation and privatization in Ukraine.
- Electric power restructuring and regulatory reform for Ghana.
- Consumer access through POOLCO, comparison of England/Wales pool model and bilateral contracts models, California IOU.
- Comparison of international competitive market models, cost-of-service, and performance-based-ratemaking for Russia's RAO UES.
- Principles, objectives, & strategy for competitive gas reform in Western Australia.
- Principles, objectives, & strategy for competitive electricity reform in Western Australia.
- Five electric industry reform assessments for Russia, comparing electricity market models from England/Wales, Scotland, New Zealand, Norway, U.S. (managing noted experts from U.K. National Grid, Southern California Edison, and American Electric Power).
- Energy transmission access and pricing for Western Australia, Energy Implementation Group.

- Strategy and analysis for Russian gas industry reform and energy efficiency, World Bank.
- Strategy for preferred electric & gas markets in Australia (New South Wales, Victoria, and Tasmania).
- Electricity market analysis for Norway's Statkraft and Oslo Lysverker.
- Use of demand-side management in electricity markets for Scandinavian consortium of Denmark, Finland, Norway, and Sweden (ASEA).
- Recommendations on legislation and market structure to create Norway's groundbreaking competitive electricity market (for Northern Europe).
- Evaluation of England/Wales electricity market protocols and uplift rules, and comparison of England/Wales and Scotland markets.
- Cost-effectiveness of market and demand-side options for Victoria and New South Wales, Australia.
- Alternative generation valuation, contracting & pricing in Indonesia.

### *Selected Regulatory Reports, Publications, and Presentations*

Smart Grids: Infrastructure, Technology, and Solutions, 2<sup>nd</sup> Addition, Stuart Borlase, Editor, CRC Press, 2018 (author of multiple chapters on markets, policy, and future vision).

The Policymaker's Toolkit: Vital Questions about Proposed Transactive Energy Systems, NIST Transactive Energy Challenge: Business and Regulatory Models Working Group June 2017 (coauthored).

To Integrate and Optimize the Grid: Locate and Customize Distributed Energy Resources, Advanced Workshop in Regulation and Competition, 30<sup>th</sup> Annual Western Conference, Monterey, CA, 28 June 2017 (coauthored).

Integration and Optimization of Distributed Energy Resources: Big Data Analytics do the Job, Advanced Workshop in Regulation and Competition, 36<sup>th</sup> Annual Eastern Conference, Annapolis, MD, 1 June 2017 (coauthored).

Data Issues in the Modern Electricity Grid, Advanced Workshop in Regulation and Competition, 36<sup>th</sup> Annual Eastern Conference, Annapolis, MD, 1 June 2017 (coauthored).

Seven Conditions Justify Smart Grid Investments, Public Utilities Fortnightly, January 2017.

History and Future of Utility Revenue Decoupling: What Implications with New Business and Market Models? University of Illinois, Gleacher Center, Chicago, January, 2017.

Transactive Energy Models, NIST Transactive Energy Challenge: Business and Regulatory Models Working Group, September 2016 (coauthored).

Steps to Integrate and Optimize DERs, NARUC ERE Staff Subcommittee Webinar, 1 June 2016.

Assessing Electric Utility Potential for a Distributed Energy Future – Scope and Scale from Value-Added Integration and Optimization, Advanced Workshop in Regulation and Competition: 35th Annual Eastern Conference, Shawnee on Delaware, Pennsylvania, 11-13 May 2016, (coauthored).

Utility Efficiencies with Distributed Energy Resources: Scope, Scale, and Dynamic Benefits, Edison Electric Institute, Alternative Regulation Group, Webinar, 11 April 2016.

Locational Net Benefits Analysis: To Integrate and Optimize Distributed Energy Resources for Maximum Value, LNBA Methodology and Demonstration Workshop, California Public Utilities Commission, San Francisco, CA, 1 February 2016.

Developing the Plans: Four Steps Net 2x to 5x Greater Benefits, Utility Variable Generation Working Group: Fall Technical Workshop, San Diego, CA, 14 October 2015.

Electric Utility Adaptation to Disruptive Change: Dashboards for Success and Profitability by 2020? Advanced Workshop in Regulation and Competition: 34th Annual Eastern Conference, Shawnee on Delaware, Pennsylvania, 13-15 May 2015.

The Integration and Optimization of DSM: Extraordinary Benefits when the Orchestra Plays Together, AESP National Conference, Orlando, Florida, 9-12 February 2015 (coauthored).

IDSM Cost-Effectiveness: What Happened Outside of California? Results from Duke Energy, NVE, Avista ... presentation in CPUC R. 14-10-003, 22 January 2015.

Methods & Tools to Accomplish Distribution Resources Planning, CPUC DRP Workshop, presentation in CPUC R.14-08-013, 8 January 2015.

Stakeholder Optimization Impacts on Utility Planning and Pricing, Advanced Workshop in Regulation and Competition, 33rd Annual Eastern Conference, Shawnee on Delaware, Pennsylvania, 14-16 May 2014 (coauthored).

Estimating the Value of Service Using Load Forecasting Models, Advanced Workshop in Regulation and Competition: 33rd Annual Eastern Conference, Shawnee on Delaware, Pennsylvania, 14-16 May 2014 (coauthored).

NV Energy Demand Response Program Insurance Value, Presentation at Nevada PUC, Las Vegas, 27 October 2014 (coauthored).

2030 Vision for 100% Clean Energy, Third Global Forum, Business As An Agent of World Benefit, 16 October 2014.

2020 Vision for Utility Business Models and Maximum Clean Energy Value, Discussion with the New York Public Service Commission, August 1, 2014.

Consumer Engagement, Cost-Effectiveness, and Valuation, Shanghai International Demand Response Workshop, 28 July 2014.

Developing New Business Models for Utilities with Renewables, Conservation and the Smart Grid, Advanced Workshop in Regulation and Competition: 27th Annual Western Conference, Monterey, California, June 26, 2014 (coauthored).

Taking the Plunge – Engaging the Water Sector as a Preferred Resource to Meet Local Energy Needs, Advanced Workshop in Regulation and Competition: 27th Annual Western Conference, Monterey, California, 26 June 2014 (coauthored).

Market Guidance for Energy Storage: Steps to Maximize Value, Strategy Integration, May 2014.

Utilities of the Future: Needed Changes in Business Strategy and Regulatory Policy, Advanced Workshop in Regulation and Competition: 33rd Annual Eastern Conference, Shawnee on Delaware, Pennsylvania, 14-16 May 2014 (coauthored).



Utility Build-out of Regional Microgrids with Advanced Analytic Methods: Local Demand Meets Maximum Value-Proposition, Advanced Workshop in Regulation and Competition: 33rd Annual Eastern Conference, Shawnee on Delaware, Pennsylvania, 14-16 May 2014 (presentation, coauthored).

Integration & Optimization of DSM: Extraordinary Benefits When the Orchestra (Energy Efficiency, Demand Response, Distributed Generation, and Storage) Plays Together, Lawrence Berkeley Laboratories, Environmental Energy Technologies Division, 27 March 2014 (coauthored).

Strategic Convening in the Energy Utility Industry: The Case of National Grid, in Organizational Generativity: The Appreciative Inquiry Summit and a Scholarship of Transformation, Advances in Appreciative Inquiry, Volume 4, 273-288, Emerald Press, 2014 (coauthored).

Valuing Integrated Demand Side Management (IDSMD) for Improved Cost Effectiveness, DistribuTech Conference, San Antonio, TX, 28 January 2014 (coauthored).

*Return On Equity – Making a New Case*, Presentation to the Western Energy Institute Spring Symposium, Seattle, WA, 17 March 2011.

*Coupling Demand-Side and ISO/RTO Services -- Not With This Market...* Presentation to Harvard Electric Policy Group, Los Angeles, 25 February 2011.

New Utility Business Models and Regulatory Incentives: Options to Transform Disruptive Change and Maximize Value, Strategy Integration LLC and The Energy Collaborative, October 2013 (coauthored).

The Paradox of Leading Industry Transformation, The Energy Collaborative, July 2013 (coauthored).

Integrated Demand-Side Management Cost-Effectiveness and Optimization Methodology, Advanced Workshop in Regulation and Competition: 26th Annual Western Conference, Monterey, California, June 21, 2013 (coauthored).

Smart Grids: Infrastructure, Technology, and Solutions, Stuart Borlase, Editor, CRC Press, October, 2013 (contributor to multiple chapters).

*Electric Drive By '25: How California Can Catalyze Mass Adoption of Electric Vehicles by 2025*, E. Elkind, UCLA Law/UCB Law, September 2012 (contributor).

*Integrated Demand Side Management Cost-Effectiveness: Is Valuation the Major Barrier to New "Smart-Grid" Opportunities?* American Council for an Energy-Efficient Economy, Monterey, CA 12-17 August 2012 (coauthored).

*Engaging Customers at the Touch Points: Implications for the Smart Grid Value Chain*, presentation at the National Town Meeting on Demand Response + Smart Grid, Washington, D.C. 27 June 2012.

*Value Mapping for Integrated Demand Side Management: A More Advanced Method for Resource Selection?* 25<sup>th</sup> Annual Western Conference; Center for Research in Regulated Industries, Monterey CA, 29 June 2012 (coauthored).

*Integrated Demand-Side Management Cost-Effectiveness*, Association of Energy Service Professionals, Webinar Presentation, 18 December 2011.

*Maximum Market Value and Maximum Customer Choice: Nar the Twain May Meet?* AESP'S Fall Conference and Expo: Customer Behavior and the Smart Grid, Association of Energy Service Professionals, Dallas, TX, 4 October 2011

*Reality-Based Benefit-Cost Assessment of Demand Side Management Integration: Methods to Maximize Market Capture in Organized Markets*, 24th Annual Western Conference, Center for Research in Regulated Industries, Rutgers University, Monterey, CA 15-18 June 2011 (coauthored).

*Integrated Demand-Side-Management Cost-Effectiveness Framework*, IDSM Task Force, San Francisco, CA, May 2011.

*Coupling Demand-Side and ISO/RTO Services -- Not With This Market...* Presentation to Harvard Electric Policy Group, Los Angeles, 25 February 2011.

*Rx for Integrated Demand-Side Management*, Energy Central Webcast, 26 January 2011.

*Policy Vision for the Smart Grid: Performance Metrics and Incentives for Optimal Investment*, 23rd Annual Western Conference, Center for Research in Regulated Industries, Rutgers University, Monterey, CA, 23-25 June 2010.

Next Generation Benefit-Cost Analysis: Option Value for Dispatchable Smart Grid Capacity, Comverge, Inc. July 23, 2009

*Next Generation Benefit-Cost Analysis: An Option Model for Dispatchable Smart Grid Capacity*, Advanced Workshop in Regulation and Competition, 22nd Annual Western Conference, Monterey, CA, 19 June 2009

*Case Study: Option Valuation for Fully Outsourced Southern California Edison Demand Response Contract*, Connectivity Week 2009, Santa Clara, California, 8-11 June 2009

*Better Electricity Pricing Logic: Enabling Full-On Customer Response*, Association of Energy Service Professionals, San Diego, CA, 28 January 2009.

*Optimizing Demand Response*, Public Utilities Fortnightly, May 2008.

*Demand Response Option Value – Maximum Benefits and Model Contract*, Advanced Workshop on Regulation and Competition: 27<sup>th</sup> Annual Eastern Conference, Skytop, Pennsylvania, 14-16 May 2008.

*Business Case for Demand Response Valuation: A Roadmap for Operations and Economics*, Advanced Workshop in Regulation and Competition, 21<sup>st</sup> Annual Western Conference, Monterey, CA, 18 June 2008.

*Smart-Grid Business Case Benefits From Legislation And Regulation: Overcoming The Barriers*, Autovation Conference, Atlanta, GA, 11 June 2008.

*An Integrated Analysis of the Electricity Market: Does More Knowledge Enable Market Manipulation?* 7th Annual Global Conference on Business and Economics, (Coauthored), Rome, Italy, 13 October 2007.

*Consumer Choice and More Complete Contracting: Removing the Barriers to Demand-Side Investment*, 20th Annual Western Conference, Rutgers Advanced Workshop in Regulation and Competition, Monterey, CA, (coauthored) June, 2007.

*Residential Gateway for Electricity Response: Resolve of Customer Access, System Expansion, Market Manipulation, and Environmental Goals*, Social Science Network, 9 February 2007, (coauthored).

*“Capacity” for the Energy Only Market: Demand Response to Educate Customers, Hedge Market Power, and Ensure Resource Adequacy*, White Paper, Electric Reliability Council of Texas and the Public Utilities Commission of Texas, 28 November 2006.

*Value Statement for Price Responsive Technologies*, Strategy Integration Inc., August 2001.

*Electric Distribution System Automation with NETCOMM: The Future: and Its Application for Mexico*, XII Seminario Nacional, Sobre El Uso Racional De La Energia, November 1991, Mexico City.

*An Integrated Analysis of the Electricity Market: Does More Knowledge Enable Market Manipulation?* 8th Global Conference on Business and Economics, (Coauthored), Rome, Italy, 13 October 2007.

*Knowledge to Game the Day-Ahead Electricity Market*, Business Review Cambridge, Vol. 7, No. 1, 2007.

*How Enron et al Gamed the Electricity Market: An Empirical Analysis of Trader Knowledge*, 6th Global Conference on Business and Economics, Harvard University, Cambridge, MA., 15-17 October 2006 (coauthored).

*Work Plan for Regional (Central Asia) Electricity Markets Assistance Program (REMAP)*, 30 September 2006.

*How Enron et al Gamed the Electricity Market: Qualitative Assessment and Quantitative Analysis*, unpublished doctoral thesis, Weatherhead School of Management, Case Western Reserve University, 18 May 2006.

*Toward An Interpretive Evaluation Of Electricity Markets: Comparing Western U.S And Northern Europe -- Whether Common Knowledge Of Rationality Results In Correlated Equilibrium*, Weatherhead School Of Management, Case Western Reserve University, 10 December 2004.

*Long-Term Incentives for Executives: Securing the Human Asset Base of Non-Profit Organizations*, ARNOVA Conference in Los Angeles, 18 November 2004.

*Strategic Reform for Debased Energy Markets: Use of Game Theory Predictions?* 24th International Conference of the Strategic Management Society (co-authored) San Juan, Puerto Rico, 3 November 2004.

*Remedies for Electricity Market Manipulation Through Game Theory? A Category III Research Proposal*, Seventh Executive Doctoral Colloquium, Academy Of Management Conference, New Orleans, 7 August 2004.

*Long-Term Incentives for Executives and Managers: Securing the Human Asset Base of Firms*, Case Western Reserve University, 3 November 2003.

*Federal Grid Company of Russia: Financial Model*, Deloitte Touché Emerging Markets, July 2003 (contributor).

*Federal Grid Company of Russia: Business Plan*, Deloitte Touché Emerging Markets, July 2003 (contributor).

*Scenarios for Energy Costs: Alameda County Water District’s Risks and Opportunities*, Strategy Integration Inc., 14 September 2001.



*Use of Plant-Based Bid Caps to Fix the Western Electric Wholesale Markets: Summary Discussion*, Strategy Integration Inc., 25, June 2001.

*Sketch of CAISO's Inherent Problems*, Strategy Integration Inc., 16 April 2001.

*Proposal for RMR Reform: Specific Performance and Plant Availability*, Strategy Integration Inc. February 2001.

*Western Market Power Mitigation with Plant Bid-Caps*, for California ISO Board, Strategy Integration Inc., 9 February 2001.

*Power Grid Code of the Republic of Kazakhstan*, for Ministry of Energy, Industry and Commerce of the Republic of Kazakhstan, Astana, 2000.

*Comments of TURN and UCAN for the Blue Ribbon Panel on Use of Single-Price Auctions in the California Power Exchange*, 12 December 2000.

*Electricity Price Mitigation for the West: Cost-Based Bids Where Competition Fails*, Strategy Integration, December 2000.

*Residential Consumer Response to ISO Management's Analysis of the MSC Report on June Price Spikes*, Strategy Integration Inc., October 2000.

*Demand Response through Priority Service Pricing*, Strategy Integration Inc., For Board of Governors, California Independent System Operator Corporation, 1 September 2000.

*RMR Undermines Grid Reliability as Market Signals Become Muted*, for California ISO Board of Governors, Strategy Integration Inc., March 2000.

*Elements of Competitive Electricity Markets: A Primer*, for United States Energy Association, Warsaw, Poland, February 2000.

*California Assumptions on Market Structure: Can Common Ground be Found?*, for California ISO Board of Governors, Strategy Integration Inc., January 2000.

*Steps toward a Sound Basis for Ukraine Energy Legislation*, for USAID, Kiev, Ukraine, 15 November 1999.

*To Compete or to Use Planning in California: Locational Signals or Command and Control?* California ISO Board of Governors, Strategy Integration, 12 October 1999.

*Power Sector Reform Program Evaluation, Final Report*, United States Agency for International Development, Regional Mission, Ukraine, Belarus and Moldova, July 1999.

*The Ukraine Market for Electricity: Two Simple Problems and Three Myths*, for USAID-Ukraine, Kiev, 16 May 1999.

*California's Schedule Coordinator: Market Maker with Advantage?* Public Utilities Fortnightly, 15 January 1998.

*ISO Governance and Pricing: California's Adventure in "Blunderland"*, Independent Systems Operators' Conference, Denver, October 1997.

*Securitization Trumps Competition*, Electricity Journal, January 1997.

*New Deal in California*, Electricity Journal, Volume 8 Number 9, November 1996.

*Competition in Transmission: Coming Sooner or Later?* Electricity Journal, June 1996.

*A California Restructuring Settlement: Will All the Parties Agree?* Electricity Journal, April, 1996.

*Recommendations and Principles to Address Discrimination in Market Pricing*, Western Electricity Power Exchange, UCAN, February 1996.

*UCAN Report on Recommended Issues for the California Energy Commission's ER '96 Proceeding*, California Energy Commission, December 1995.

*Transmission System Operation in a Privatized Electricity System*, for RAO-UES, Russia, USAID, 17-28 July 1995.

*What Model for Restructuring? The Debate in the Competitive Power Market Working Group*, The Electricity Journal, July 1995 (coauthored).

*Status and Direction of California's Electric Industry Restructuring: Report of the Debate in the Competitive Power Market Working Group*, (coauthored), February 1995.

*Electric Industry Reform: Regulation of Structural Options*, The California Energy Commission's 1994 Electricity Report Proceeding, September 1994.

*Guest Editorial: California Reform Needs a Lighter Touch*, The Electricity Journal, July 1994.

*Response of Strategy Integration to Proposed Restructuring and Reform Policies*, California Public Utilities Commission, OIR-94-04-031, 011-94-04-032, 8 June 1994.

*Principles for Competitive Electricity Transmission Access, Pricing, and Generation Procurement*, Energy Implementation Group, Perth, Australia, 25 February 1994.

*Objectives, Guidelines, and Tariff Components for Transmission Pricing*, Energy Implementation Group, Perth, Australia, 20 January 1994.

*Supply Side Incentives for Energy Efficiency: A Review and Comparison to Demand-Side Incentives*, Electric Power Research Institute, December 1993.

*21st Century Imperative for Electric Utilities: Rise and Compete or Perish, What Structure and Technology for Competitive Advantage?* Strategy Integration, September 1993 (coauthored).

*Electric Utility Incentive Regulation: Strategies for Sustainable Competitive Advantage?* Sixth Western Conference, Rutgers University, Monterey, California, 7-9 July 1993.

*The Energy Challenge for the 21st Century*, The Report of the Energy Board of Review, Perth, Australia, April 1993, (contributing author).

*What Vision for Demand-Side Management with Reform?* Summit Round Table, Strategy Integration, March 1993.

*Electric Utilities in Competition: Directions for Research and Development*, Strategy Integration, 16 February 1993.

*Comparative Advantages of Utilities and ESCOs in DSM*, (co-authored), Strategy Integration, 5 February 1993.

*Steps in California's Soft Energy Path: 1972 to 1992*, Strategy Integration, August 1992.

*Energy Efficiency and DSM in Latin America and the Caribbean: An Opportunity for International Cooperation*, Latin American Energy Organization (OLADE), International Energy and DSM Conference, Toronto, 1992 (co-authored).

*What Roles and Risks for Profit Maximizing in DSM Delivery?* International Energy and DSM Conference, Toronto, 1992 (co-authored).

*Northern Mexico's Rapid Growth from Air Conditioning: What Impacts from Appliance Dumping, What Solutions?* International Energy and DSM Conference, Toronto, 1992 (co-authored).

*DSM in Asia and Latin America, Strategy for Industrial Energy Conservation in Mexico: Financing, Demonstration, and Promotion*, Energy Savings Trust, 1992, Mexico City.

*Electric Marketing and Energy Efficiency: What Path for Shareholder Value?* (coauthored), ACEEE Conference Proceedings, Panel 8, Paper 23, Asilomar, California, July 1992 (coauthored).

*Conserve or Grow: Financial Impacts on the Utility of Alternative Resource Strategies*, in New Electricity 21, Power Industry Technology and Management Strategies for the Twenty-First Century: Conference Proceedings, Tokyo, Japan, 12-14 May 1992 (coauthored).

*Positioning Gas Utilities Given Restructuring: Two Scenarios for IRP*, Washington Gas Least-Cost Planning Conference, Washington, DC, April 1992.

*Deregulation or Incentive Regulation? -- Alternative Approaches for the Electric Utility Industry in the 1990's*, 14th International Conference, Energy Development in the 1990s: Challenges Facing the Global/Pacific Markets, International Association of Energy Economics, 10 July 1991.

*Economic Criteria for Resource Plan Integration: Resolve of Conflicts with Optimization and Least Cost*, for Newfoundland Labrador Hydro, December 1991.

*Increased Efficiency with Gas Capacity Bidding: "The Answer" for Priority Allocation and Pipeline Expansion*, California Public Utilities Commission Working Paper, Vol. 2, 1991.

*Alternative Regulatory Structures and their Implications for California*, California Public Utilities Commission, February 1991.

*Towards Optimal Multi-attribute Bidding for Electric Power*, Third Annual Western Conference, Advanced Regulation and Public Utility Economics, San Diego, CA 12 July 1990.

*Perspectives and Issues for Demand-Side Management in the 90's*, California Public Utilities Commission, July 1990.

*California's Private Power Development: Success through Arbitration and Pricing*, International Workshop on Private Sector Power Generation, Jakarta, March 1989.

*Value of Service and Least-Cost Planning: Writing on the Wall for Demand- Side Opportunities?* ACEEE Summer Study on Energy Efficiency in Buildings, Asilomar, California, August 1988.

*Perspectives and Issues in Least Coast Planning: Toward a Standard Practice Approach*, Electric Power Research Institute, June 1988.

*Regulatory View of Capacity Valuation in California*, Energy Journal, Volume 9, 1988.

*Toward a Standard Practice Approach to Integrated Least-Cost Utility Planning*, Public Utilities Fortnightly, Volume 121 No. 5, March 1988.

*Integrated Least-Cost Electricity Planning Under Uncertainty: Issues and Progress*, Workshop on Energy Resources Planning for Electricity, Honolulu, Hawaii, May 1987.

*Least-Cost Resource Plan Integration under Uncertainty: Toward a Standard Practice Approach*, California Public Utilities Commission, September 1986.

*Reducing the Costs of Wind Power: the Variable Speed Isosynchronous Generator*, Proceedings of Windpower '85, San Francisco, CA, Aug. 27—30, 1985, pp. 576—582.

*Programmatic and Implementation Issues in Quality Assurance for Diablo Canyon Units I and II: Phase I Final Report*, California Public Utilities Commission, 8 February 1985.

*A Preliminary Assessment of Uncertainties in Forecasting Incremental Heat Rates*, California Public Utilities Commission, April 1984.

*Measurement and Evaluation of the Energy Conservation Potential in California's Residential Sector*, California Energy Commission Staff Report, June 1983 (contributor).

*Innovative Financing for Local Government Energy Projects: Energy Savings at Little or No Cost*, California Energy Commission, March 1983.

*Standard Practice for Cost-Benefit Analysis of Conservation and Load Management Programs*, Joint Report of the California Public Utilities Commission and the California Energy Commission, 1982 (co-authored).

*Perspectives and Issues in Least-Cost Planning: Toward a Standard Practice Approach*, Least-Cost Energy Planning in the Midwest: A Symposium, Electric Power Research Center, March, 1982.

*California's Nuclear Disposal Law Confronts the Nuclear Waste Management Dilemma: State Power to Regulate Reactors*, Environmental Law, Vol. 14, 1982.

*State Opportunities to Regulate Nuclear Power and Provide Alternative Energy Supplies, Part I and Part II*, University of San Francisco Law Review, Vol. 15, 1981.

*Amazing Politics, the Swedish Nuclear Referendum*, The Ecologist, Volume 5, Number February/March 1981, Cornwall, England.

*Community Peak Electricity Reduction*, Soft Energy Notes, February/March 1981.

### ***Smart Grid Development, Investment, Business & Market Strategy***

This includes work on solutions, strategy, and business models, and policy for, among others, the following:

- Austin Energy
- British Columbia Hydro
- California Independent System Operator
- California Integrated Distributed Energy Resources (IDER) process
  - Competitive Solicitation Working Group
  - Cost-Effectiveness Working Group
  - Integrated Capacity Analysis and Locational Net Benefits Analysis Working Groups
- Central Maine Power
- China Light & Power
- Commonwealth Edison
- Comverge
- Detroit Edison
- Duke Energy
- Edison Electric Institute, Alternative Regulation Working Group
- Electric Power Research Institute (electric & gas smart grid options)
- Enbala Power Networks
- Energy Foundation (U.S. wide)
- Integral Analytics
- Itron (strategy and business proposition analysis on three continents)
- Investment Bankers (Australia, Canada, Europe, Japan, Korea, U.S.)
- Kauai Island Utility Coop
- National Grid (U.S.)
- Nevada Power
- NIST Transactive Energy Business and Regulatory Models WG
- OhmConnect
- San Diego Gas & Electric
- Southern California Edison
- Tendril
- U.S. Trade & Development Agency
- Vote Solar